

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION
ORDER NO. R5-2004-0156
WASTE DISCHARGE REQUIREMENTS
FOR
SIERRA CEDAR PRODUCTS INCORPORATED
FORMER FEATHER RIVER FOREST PRODUCTS SITE
ENHANCED BIOREMEDIATION PILOT STUDY
MARYSVILLE, YUBA COUNTY

The California Regional Water Quality Control Board, Central Valley Region (hereafter Regional Board), finds that:

1. Sierra Cedar Products Incorporated (hereafter Discharger) submitted a Report of Waste Discharge on 23 December 2003 and supplemental information on 29 March 2004 completing its application to inject Hydrogen Release Compound (HRC[®]) into groundwater at the former Feather River Forest Products site at 6124 Avondale Avenue, Marysville (hereafter referred to as Site).
2. The Site comprises Yuba County Assessor's Parcel Numbers 020-030-041, 048, and 049 within Township 15N, Range 4E, Section 30, MDB&M. The general location of the Site is shown on Attachment A, which is attached hereto and made part of this Order, by reference.

BACKGROUND

3. The Feather River Forest Products Company operated a lumber mill at the site. Rosboro Lumber Company (hereafter Rosboro) acquired the Feather River Forest Products Company in the early 1980s and continued operating a lumber mill on this parcel for about 5 years. Rosboro sold the Site to the Discharger in April 2003.
4. From 1993 through 1997, Rosboro conducted several Site investigations, which revealed that volatile organic compounds (VOCs), including tetrachloroethene (PCE), trichloroethene (TCE), 1,1-dichloroethene (1,1-DCE), cis-1,2-dichloroethene (cis-1,2-DCE), trans-1,2-dichloroethene (trans-1,2-DCE) and 1,1,2,2-tetrachloroethane were present in the soil and groundwater. PCE was used at this Site as a metal degreaser.
5. In 1997, Rosboro excavated soil contaminated with VOCs and hauled it off-site. In 1998, Rosboro installed a groundwater extraction and treatment system and operated it intermittently from August 1999 to September 2000. This system is not currently operational.
6. The shallow water bearing zone begins at about 20 feet below ground surface (bgs) and is monitored over various depth intervals from about 20 feet bgs to about 95 feet bgs, as required by Monitoring and Reporting Program (MRP) No. R5-2003-0840. The highest concentration of PCE and TCE detected in groundwater at the Site was from MW-4 during the April 1995 sampling event at 8.6 µg/l and 530 µg/l, respectively.

The February 2004 sampling event showed that MW-4 contained PCE and TCE at 1.2 µg/l and 39 µg/l, respectively. The Site has two supply wells that are used for domestic use, including drinking water, and log deck irrigation. The Site and the monitoring well network is shown on Attachment B, which is attached hereto and made part of this Order by reference.

7. In September 2001, the Discharger analyzed groundwater samples for water quality parameters to evaluate enhanced in-situ remedial technologies.
8. The Discharger uses the Site for the storage of logs before they are processed into lumber and other products. Waste Discharge Requirements Order No. 98-224 regulates the permitted irrigation of the log deck.

PILOT STUDY

9. As a remedial strategy to reduce VOCs found in the groundwater at the Site, the Discharger proposes to conduct a pilot study that includes up to two injection events of HRC[®] through five injection points, arranged in a circular pattern at a radius of 15 feet around MW-4, as shown on Attachment C, which is attached hereto and made part of this Order by reference. The Site has flat and reversing groundwater gradients, and flow velocities range between 0.08 and 141.9 feet per year. Regenesis, the manufacturer of HRC[®] states in literature that HRC[®] continues to stimulate biodegradation for up to 18 months. Thus, the treatment area may extend from MW-4 to a radius of about 213 feet. During each injection event the Discharger proposes to inject four pounds of HRC[®] per linear foot of vertical depth of the water bearing zone, which is the minimum dosage rate recommended by Regenesis. The Discharger proposes to treat an aquifer thickness of about 50 feet, so each injection point will receive about 200 pounds of HRC[®]. The total treatment dose for any single injection event shall not exceed 1,000 pounds. The Discharger proposes to evaluate the pilot study after nine months. The pilot study will continue until groundwater conditions return to those found during baseline sampling
10. HRC[®] is a food grade polylactate ester (glycerol tripolylactate) designed to provide a slow release of lactic acid upon hydration. Indigenous anaerobic microbes metabolize the lactic acid and produce hydrogen, which then can be used for the reductive dechlorination of PCE and its degradation products. This technology has been successfully used to remediate chlorinated hydrocarbons at other cleanup sites, so bench-scale testing was not necessary. The pilot study is necessary to evaluate site specific side reactions, injection spacing and dosing for full-scale implementation.
11. The Discharger proposes to use a direct push rig to inject the HRC[®]. In the case where the direct push rig meets with refusal and does not reach the desired depth of 70 feet bgs, the rig will be moved 5 feet from its original location and another boring will be attempted.

CONTINGENCY PLAN

12. The pilot study protocol includes contingency plans to be implemented if unexpected adverse events occur. These plans include collection of additional groundwater monitoring data, including those for amendments, breakdown products, and byproducts, and groundwater extraction.
13. The Discharger will collect baseline groundwater samples two to four weeks prior to the injection of HRC[®] and at the same time, will conduct the routine groundwater monitoring as required by MRP No. R5-2003-0840. Four monitoring wells will be sampled for volatile organic compounds, metabolic acids, metals, general chemistry parameters and reaction byproducts appropriate to the pilot study as listed in Table 2 of the attached MRP No. R5-2004-0156.
14. The Discharger will conduct the second injection event if the results of the first event show that chlorinated hydrocarbons are still present and groundwater does not contain total organic carbon, a surrogate for lactic acid, above the baseline level. The Discharger will recommend the dosage protocol for the second injection event in the Pilot Study Evaluation Report for the first injection event, as required by Provision D.5.c. The dosage protocol for the second injection event will not exceed the dosage protocol for the first injection event.
15. The Discharger will implement the groundwater extraction contingency plan if total organic carbon or chloride increase more than 20% over the baseline concentrations established in monitoring well MW-2, 3 or 12. The groundwater extraction contingency plan consists of the extraction of groundwater from EW-1 and storing it in on-site holding tanks until the extracted groundwater can be sampled and properly disposed.

REGULATORY CONSIDERATIONS

16. The injection of chemicals into waters of the State is subject to regulation under the California Water Code. This Order authorizes the Discharger to inject HRC[®] into groundwater subject to specific discharge requirements.
17. The *Water Quality Control Plan for the Sacramento River and San Joaquin River Basins, Fourth Edition* (hereafter Basin Plan) designates beneficial uses, establishes water quality objectives (WQOs), contains implementation plans and policies for protecting waters of the basin, and incorporates by reference plans and policies adopted by the State Water Resources Control Board (State Board). Pursuant to Section 13263(a) of the California Water Code, waste discharge requirements must implement the Basin Plan.
18. Surface water drains to on-site storage ponds and is then used to irrigate a log deck. If surface water was allowed to drain off-site, it would drain to the Yuba River about one mile east of its confluence with the Feather River. The designated beneficial uses of the Yuba

River are agricultural irrigation and stock watering; industrial power supply; water contact recreation, non-contact water recreation; warm and cold freshwater habitat; migration of warm and cold freshwater species; spawning of warm and cold freshwater species; and wildlife habitat.

19. The beneficial uses of underlying groundwater are municipal and domestic supply, agricultural supply, and industrial process and service supply.
20. Surrounding land uses are commercial and residential.
21. State Board Resolution No. 92-49 (hereafter Resolution No. 92-49) requires the Regional Board to require actions for cleanup and abatement of discharges that cause or threaten to cause pollution or nuisance to conform to the provisions of State Board Resolution No. 68-16 (hereafter Resolution No. 68-16) and the Basin Plan. Pursuant to Resolution No. 92-49, the Regional Board shall ensure that dischargers are required to clean up and abate the effects of discharges in a manner that promotes attainment of either background water quality, or if background levels of water quality cannot be restored, the best water quality which is reasonable and which complies with the Basin Plan including applicable WQOs.
22. Resolution No. 68-16 requires the Board in regulating discharges to maintain high quality waters of the state until it is demonstrated that any change in quality will be consistent with maximum benefit to the people of the State, will not unreasonably affect present and potential beneficial uses, and will not result in water quality less than that described in plans and policies (e.g., quality that exceeds WQOs). Temporal degradation of groundwater at this site due to the HRC[®] injection may occur. The temporary degradation allowed by this Order is consistent with Resolution No. 68-16 since (1) the purpose is to accelerate and enhance remediation of groundwater pollution and such remediation will benefit the people of the state; (2) the discharge facilitates a pilot project to evaluate the effectiveness of cleanup technology in accord with Resolution No. 92-49; (3) the degradation is limited in scope and duration; (4) best practicable treatment and control, including adequate monitoring and contingency plans to assure protection of water quality, are required; and (5) the discharge will not cause WQOs to be exceeded beyond the treatment area or the duration of the pilot study as described in Finding No. 9.
23. Section 13267(b) of California Water Code provides that:

In conducting an investigation specified in subdivision (a), the regional board may require that any person who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge within its region, or any citizen or domiciliary, or political agency or entity of this state who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge waste outside of its region that could affect the quality of the waters of the state within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the board requires. The burden, including costs of these reports, shall bear a reasonable relationship to the need for the reports and the benefits to be obtained from the reports. In requiring

those reports, the regional board shall provide the person with a written explanation with regard to the need for the reports, and shall identify the evidence that supports requiring that person to provide the reports.

The technical reports required by this Order and the attached MRP No. R5-2004-0156 are necessary to assure compliance with these WDRs. The Discharger owns and operates the facility that discharged the waste subject to this Order.

24. The California Department of Water Resources sets standards for the construction and destruction of groundwater wells, as described in *California Well Standards Bulletin 74-90* (June 1991) and *Water Well Standards: State of California Bulletin 74-81* (December 1981). These standards, and any more stringent standards adopted by the State or Yuba County pursuant to California Water Code Section 13801, apply to all monitoring wells.
25. Issuance of this Order is an action to assure the restoration of the environment and is, therefore, exempt from the provisions of the California Environmental Quality Act (Public Resources Code, Section 21000, et seq.), in accordance with Section 15308 and 15330, Title 14, California Code of Regulations (CCR).
26. This discharge is exempt from the requirements of *Consolidated Regulations for Treatment, Storage, Processing, or Disposal of Solid Waste*, as set forth in Title 27, CCR, Section 20005, et seq. (hereafter Title 27). Section 20090(d) allows exemption for a project to clean up a condition of pollution that resulted from an unauthorized release of waste based on the following:
 - a. The cleanup and abatement action is under the direction of a public agency;
 - b. Wastes removed from the immediate place of release will be discharged according to the Title 27 regulations; and
 - c. The remedial actions intended to contain wastes at the place of release shall implement the Title 27 regulations to the extent feasible.
27. Pursuant to California Water Code Section 13263(g), discharge is a privilege, not a right, and adoption of this Order does not create a vested right to continue the discharge.
28. All the above and the supplemental data and information and details in the attached Information Sheet, which is incorporated by reference herein, were considered in establishing the following conditions of discharge.
29. The Discharger and interested agencies and persons were notified of intent to prescribe WDRs for this discharge and provided with an opportunity for a public hearing and an opportunity to submit written views and recommendations.
30. In a public meeting, all comments pertaining to the discharger were heard and considered.

IT IS HEREBY ORDERED that pursuant to Sections 13263 and 13267 of the California Water Code, Sierra Cedar Products, its agents, successors, and assigns, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted hereunder, shall comply with the following while conducting the above-described pilot study:

[Note: Other prohibitions, conditions, definitions, and some methods of determining compliance are contained in the attached "Standard Provisions and Reporting Requirements for Waste Discharge Requirements" dated 1 March 1991, incorporated herein.]

A. Discharge Prohibitions

1. Discharge of wastes to surface waters or surface water drainage is prohibited.
2. The discharge of other than HRC[®] into groundwater is prohibited.
3. Discharge of waste classified as 'hazardous' under Section 2521 of Title 23, CCR, or as 'designated' under Section 13173 of California Water Code is prohibited.
4. Discharge of HRC[®] at locations or in a manner different from that described in Finding Nos. 9, 10 and 11 is prohibited.

B. Discharge Specifications

1. No waste constituent shall be released or discharged, or placed where it will be released or discharged, in a concentration or in a mass that causes violation of the Groundwater Limitations.
2. Discharge of HRC[®] shall be limited to the project scope as described in Finding Nos. 9, 10 and 11.

C. Groundwater Limitations

1. During the pilot study, the Discharger shall not cause total organic carbon or chloride to exceed 20% of their respective baseline concentrations in monitoring wells MW-2, 3 or 12.
2. When the pilot study is completed, the pollutant breakdown products, amendments and byproducts shall not exceed baseline concentrations within or outside the treatment area.

D. Provisions

1. The Discharger shall notify Regional Board staff a minimum of two weeks prior to conducting baseline sampling.
2. The Discharger shall notify Regional Board staff a minimum of two weeks prior to the injection of HRC[®].
3. The Discharger shall comply with the attached MRP No. R5-2004-0156, which is part of this Order, and any revisions thereto as ordered by the Executive Officer.
4. The Discharger shall comply with the "Standard Provisions and Reporting Requirements for Waste Discharge Requirements," dated 1 March 1991, which are attached hereto and are by reference a part of this Order. This attachment and its individual paragraphs are commonly referenced as "Standard Provision(s)."
5. All of the following reports shall be submitted pursuant to Section 13267 of the California Water Code. All technical reports required herein that involve planning, investigation, evaluation, or design, or other work requiring interpretation and proper application of engineering or geologic sciences, shall be prepared by or under the direction of persons registered to practice in California pursuant to California Business and Professions Code sections 6735, 7835, and 7835.1. To demonstrate compliance with sections 415 and 3065 of Title 16, CCR, all technical reports must contain a statement of the qualifications of the responsible registered professional(s). As required by these laws, completed technical reports must bear the signature(s) and seal(s) of the registered professional(s) in a manner such that all work can be clearly attributed to the professional responsible for the work.
 - a. The Discharger shall submit a Baseline Summary Report due no later than **30 days** after collection of baseline samples to propose baseline values for total organic carbon and chloride in MW-2, 3, 4 and 12. The Discharger shall not begin injection until receiving written approval of baseline concentrations.
 - b. The Discharger shall submit a First Injection Pilot Study Implementation Report due no later than **60 days** after the first injection of HRC[®] that shall include a description of field activities, quantities and locations of HRC[®] injected, and results of the first month of monitoring.
 - c. The Discharger shall submit a First Injection Pilot Study Evaluation Report no later than **10 months** after the first injection of HRC[®], that shall include a summary of analytical results, an evaluation of the effectiveness of the HRC[®] injections and if necessary, the proposed dose protocol for the second injection event. The Discharger shall not conduct the second injection of the HRC[®] into groundwater until receiving approval from Regional Board staff.

- d. If a second injection is conducted, the Discharger shall submit Second Injection Pilot Study Implementation Report due no later than **60 days** after the second injection of HRC[®] that shall include a description of field activities, quantities and locations of HRC[®] injected, and results of the first month of monitoring.
 - e. If a second injection is conducted, the Discharger shall submit a Second Injection Pilot Study Evaluation Report no later than **10 months** after the second injection of HRC[®], that shall include a summary of analytical results, an evaluation of the effectiveness of the HRC[®] injections.
6. In the event that total organic carbon or chloride is detected more than 20% above baseline concentrations in monitoring wells MW-2, 3 or 12, the Discharger shall immediately notify Regional Board staff of the exceedance(s) and obtain a confirmation sample within **7 days** of receiving the results. Within **48 hours** of receiving the confirmation sample results, the Discharger shall notify Regional Board staff of the results followed by written notification within **7 days**.
7. **Within 15 days** of confirming an exceedance as described in Groundwater Limitations C.1, the Discharger shall implement the groundwater extraction contingency plan as described in Finding No. 15, and submit a Contingency Plan Implementation Report **45 days** thereafter.
8. The Discharger shall comply with all conditions of this Order, including timely submittal of technical and monitoring reports as directed by the Executive Officer. Violations may result in enforcement action, including Regional Board or court order requiring corrective action or imposing civil monetary liability, or in a revision or rescission of this Order.
9. The Discharger shall maintain records of all monitoring information including all calibration and maintenance records, copies of all reports required by this Order, and records of all data used to complete the application for this Order. Records shall be maintained for a minimum of three years from the date of the sample, measurement, or report. This period may be extended during the course of any unresolved litigation regarding this discharge or when requested by the Executive Officer.
10. The Discharger shall at all times properly operate and maintain all facilities and systems of treatment and control that are installed or used by the Discharger to achieve compliance with this Order. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities or similar systems, which are to be installed by the Discharger only when necessary to achieve compliance with the conditions of this Order.
11. The Discharger shall report any non-compliance, and/or accidental spill or release of liquid or material verbally to the Regional Board within 24 hours of the spill or

release, and follow-up the verbal notification with written documentation of the spill or release within 14 calendar days of the incident.

12. A copy of this Order shall be kept at the discharge facility for reference by operating personnel. Key operating personnel shall be familiar with its contents.
13. As described in the Standard Provisions, the Discharger shall report promptly to the Regional Board any material change or proposed change in the character, location, or volume of the discharge.
14. While this Order is in effect, and prior to any change in ownership of the Site or management of this operation, the Discharger shall transmit a copy of this Order to the succeeding Owner/Operator, and forward a copy of the transmittal letter and proof of transmittal to the Regional Board. Transfer of privileges granted under this Order are subject to the discretion of the Executive Officer.
15. The Regional Board will review this Order periodically and will revise requirements when necessary.

I, THOMAS R. PINKOS, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on 15 October 2004.

THOMAS R. PINKOS, Executive Officer

Attachments

Sewdr10o15o04

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2004-0156
FOR
SIERRA CEDAR PRODUCTS INCORPORATED
FORMER FEATHER RIVER FOREST PRODUCTS SITE
ENHANCED BIOREMEDIATION PILOT STUDY
MARYSVILLE, YUBA COUNTY

This Monitoring and Reporting Program (MRP) incorporates requirements for monitoring the progress of the enhanced bioremediation pilot study. This MRP is issued pursuant to California Water Code Section 13267. Sierra Cedar Products (hereafter Discharger) is required to comply with this MRP. The Discharger shall not implement any changes to this MRP unless and until a revised MRP is issued by the Executive Officer. Groundwater monitoring and reporting specified in MRP No. R5-2003-0840 is still required.

All samples shall be representative of the volume and the nature of the discharge and matrix of the sampled medium. The time, date, and location of each grab sample shall be recorded on the sample chain of custody form.

ENHANCED BIOREMEDIATION PILOT STUDY MONITORING

As shown on Attachment B, there are 18 monitoring wells (MW) associated with this site. They are designated as MW-1 through MW-14 and include the nested wells MW-9A/B, MW-10A/B, MW-11A/B and MW-13A/B. The Site has two supply wells that are used for domestic use, including drinking water and log deck irrigation. Table 1 lists the baseline groundwater monitoring schedule and applies to wells MW-2 through 7, MW-9A, 9B, 10A, 10B, 11A, 11B, 12, 13A and 13B only. Table 2 lists the pilot study groundwater monitoring schedule and applies to wells MW-2, 3, 4 and 12 only. Sample collection frequency shall be monthly for three months following the HRC[®] injection and then quarterly thereafter. Sample collection and analysis shall follow standard EPA protocol, and analyses shall be completed by a California State certified laboratory. Monitoring well samples shall be analyzed for the constituents and parameters specified and follow the schedule in the Tables 1 and 2, below.

Table 1. Baseline Groundwater Monitoring Schedule¹

Constituents	EPA Method	Maximum Quantitation Limit²
Depth to Groundwater	Field Meter	0.01 ft
pH	Field Meter	0.1 units
Temperature	Field Meter	0°C
Dissolved Oxygen	Field Meter	0.2 mg/l
Oxidation Reduction Potential	Field Meter	±300 mV
Electrical Conductivity	Field Meter	50 µS/cm ²
Total Dissolved Solids	EPA 160.1 or SM 2540C	10 mg/l
Total Organic Carbon	415, 9060, or SM 5310	1 mg/l
Turbidity	180.1	0.05 NTU
Alkalinity	SM 2320B	10 mg/l
Arsenic	D5673, 200	10 µg/l
Chloride	9056 or 300	5 mg/l
Nitrate	SM 4500 or 353	500 µg/l
Sulfate	EPA 300 or 9056	500 µg/l
Sulfide	EPA 376.2	1 mg/l
Chromium	EPA 200.8	2.5 µg/l
Copper	D1976, D5673, 200, 6010, or SM 3000	5 µg/l
Iron	EPA 200.8	100 µg/l
Ferrous Iron	200, 6020, or SM 3000	100 µg/l
Manganese	D1976, D5673, 200, 6010, or SM 3000	10 µg/l
Carbon Dioxide	SM 4500 or ASTM D1945	10 µg/l
Methane	RSK 175M or ASTM D1945	10 µg/l
Ethane	RSK 175M or ASTM D1945	10 µg/l
Ethene	RSK 175M or ASTM D1945	10 µg/l
1,1- Dichloroethene	8260B	0.5 µg/l
Cis-1,2-Dichloroethene	8260B	0.5 µg/l
Trans-1,2-Dichloroethene	8260B	0.5 µg/l
Tetrachloroethene	8260B	0.5 µg/l
Trichloroethene	8260B	0.5 µg/l
1,1,2,2-Tetrachloroethane	8260B	0.5 µg/l

¹ Baseline samples shall be collected a minimum of two weeks and a maximum of six weeks before HRC[®] injection.

² For nondetectable results.

Table 2. Pilot Study Groundwater Monitoring Schedule

Constituents	EPA Method	Maximum Quantitation Limit³
Depth to Groundwater	---	0.01 ft
pH	Field Meter	0.1 units
Temperature	Field Meter	0°C
Dissolved Oxygen	Field Meter	0.2 mg/l
Oxidation Reduction Potential	Field Meter	±300 mV
Electrical Conductivity	Field Meter	50 µS/cm ²
Total Dissolved Solids	EPA 160.1 or SM 2540C	10 mg/l
Total Organic Carbon	415, 9060, or SM 5310	1 mg/l
Turbidity	180.1	0.05 NTU
Alkalinity	SM 2320B	10 mg/l
Arsenic	D5673, 200	10 µg/l
Chloride	9056 or 300	5 mg/l
Nitrate	SM 4500 or 353	500 µg/l
Sulfate	9056 or 300	500 µg/l
Sulfide	EPA 376.2	1 mg/l
Chromium ⁴	EPA 200.8	2.5 µg/l
Copper	D1976, D5673, 200, 6010, or SM 3000	5 µg/l
Iron	EPA 200.8	10 µg/l
Ferrous Iron	200, 6020, or SM 3000	1 mg/l
Manganese	D1976, D5673, 200, 6010, or SM 3000	10 µg/l
Lactic Acid	IC-001	1.0 mg/l
Carbon Dioxide	SM 4500 or ASTM D1945	10 µg/l
Methane	RSK 175M or ASTM D1945	10 µg/l
Ethane	RSK 175M or ASTM D1945	10 µg/l
Ethene	RSK 175M or ASTM D1945	10 µg/l
1,1- Dichloroethene	8260B	0.5 µg/l
Cis-1,2-Dichloroethene	8260B	0.5 µg/l
Trans-1,2-Dichloroethene	8260B	0.5 µg/l
Tetrachloroethene	8260B	0.5 µg/l
Trichloroethene	8260B	0.5 µg/l
1,1,2,2-Tetrachloroethane	8260B	0.5 µg/l

³ For nondetectable results.

⁴ If total chromium is detected above 50 µg/l, then the discharger must also analyze for hexavalent chromium using Method 7196.

Field testing instruments (such as those used to test oxidation-reduction potential and dissolved oxygen) may be used provided that:

1. The operator is trained in proper use and maintenance of the instruments;
2. The instruments are field calibrated prior to each monitoring event;
3. Instruments are serviced and/or calibrated by the manufacturer at the recommended frequency; and
4. Field calibration reports are provided with the appropriate monitoring report.

REPORTING

In reporting monitoring data, the Discharger shall arrange the data in tabular form so that the date, sample type, and reported analytical result for each sample are readily discernible. The data shall be summarized in such a manner to clearly illustrate compliance with waste discharge requirements and spatial or temporal trends, as applicable. The results of any monitoring done more frequently than required at the locations specified in the MRP shall also be reported to the Regional Board.

As required by the California Business and Professions Code Sections 6735, 7835, and 7835.1, all Groundwater Monitoring Reports shall be prepared under the direct supervision of a Registered Engineer or Geologist and signed by the registered professional.

Quarterly reports shall be submitted to the Board **by 1 February, 1 May, 1 August, and 1 November** of each year. At a minimum, the reports shall include:

1. Tabulated results of groundwater monitoring.
2. A narrative description of all preparatory, monitoring, sampling, and analytical testing activities for the groundwater monitoring. The narrative shall be sufficiently detailed to verify compliance or lack thereof with the waste discharge requirements, this MRP, and the Standard Provisions and Reporting Requirements. The narrative shall be supported by field logs for each well documenting depth to groundwater; parameters measured before, during, and after purging; calculation of casing volume; total volume of water purged, etc.;
3. Copies of all laboratory analytical report(s);
4. Cumulative data tables containing the water quality analytical results and depth to groundwater;
5. Calculation(s) of groundwater elevations and figures showing the groundwater gradient and narrative discussion of fluctuations, if any;
6. An narrative discussion of the analytical results for all groundwater locations monitored, including spatial and temporal trends, with reference to summary data tables, graphs, and appended analytical reports (as applicable);

7. A scaled map showing the final injection grid labeled with dose amounts per injection site, groundwater elevation contours and groundwater gradient and flow velocity in the pilot study area;
8. An evaluation of the performance of the pilot study including an analysis of its effectiveness in destroying the pollutants, and a discussion of the potential for field scale application;
9. A discussion of compliance and the corrective action taken, if any, as well as any planned or proposed actions needed to bring the discharge into full compliance with the waste discharge requirements; and
10. A discussion of any data gaps, potential deficiencies/redundancies in the monitoring system or reporting program and the anticipated date for an effectiveness evaluation of the pilot study.

A letter transmitting the monitoring reports shall accompany each report. Such a letter shall include a discussion of requirement violations found during the reporting period, and actions taken or planned for correcting noted violations, such as operation or facility modifications. If the Discharger has previously submitted a report describing corrective actions and/or a time schedule for implementing the corrective actions, reference to the previous correspondence will be satisfactory. The transmittal letter shall contain the penalty of perjury statement by the Discharger, or the Discharger's authorized agent, as described in the Standard Provisions General Reporting Requirements Section B.3.

The Discharger shall implement the above monitoring program as of the date of the Order.

Ordered by: _____
THOMAS R. PINKOS, Executive Officer

15 October 2004
(Date)

INFORMATION SHEET

ORDER NO. R5-2004-0156
SIERRA CEDAR PRODUCTS INCORPORATED
FORMER FEATHER RIVER FOREST PRODUCTS SITE
ENHANCED BIOREMEDIATION PILOT STUDY
MARYSVILLE, YUBA COUNTY

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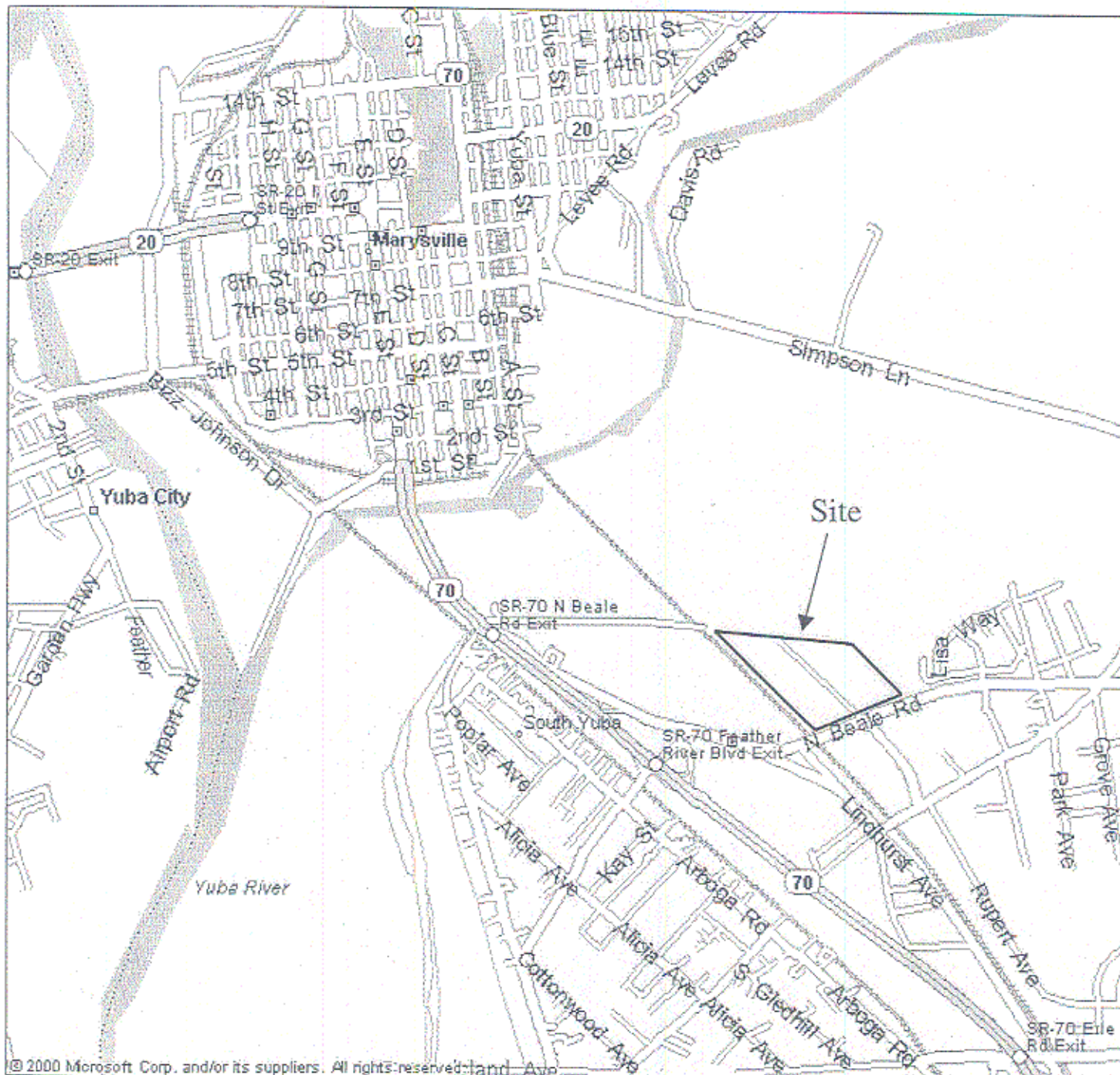
As a remedial strategy to reduce VOCs found in the groundwater at the Site, the Discharger proposes to conduct an enhanced bioremediation pilot study that includes up to two injection events of HRC[®] through five injection points into the groundwater. HRC[®] is a food grade polylactate ester (glycerol tripolylactate) designed to create anaerobic conditions in the groundwater in the application area. Indigenous anaerobic microbes metabolize the lactic acid and produce hydrogen, which then can be used for the reductive dechlorination of VOCs.

The Site has flat and reversing groundwater gradients, and flow velocities range between 0.08 and 141.9 feet per year. Regenesi, the manufacturer of HRC[®] states in literature that HRC[®] continues to stimulate biodegradation for up to 18 months. Thus, the treatment area may extend from MW-4 to a radius of about 213 feet. During each injection event, the Discharger proposes to inject four pounds of HRC[®], per linear foot of vertical depth of the water bearing zone, which is the minimum dosage rate recommended by Regenesi. The Discharger proposes to treat an aquifer thickness of about 50 feet, so each injection point will receive about 200 pounds of HRC[®]. The total treatment dose for any single injection event will not exceed 1,000 pounds.

The Discharger will sample groundwater before the HRC[®] injection and submit a Baseline Summary Report that establishes baseline concentrations for many compounds, but particularly total organic carbon and chloride. In the event that total organic carbon or chloride is detected more than 20% above baseline concentrations in monitoring wells MW-2, 3 or 12, the Discharger shall initiate a protocol that may result in the implementation of the groundwater extraction contingency plan. The pilot study will continue until groundwater conditions return to those found during baseline sampling.

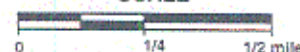
The Discharger shall submit a Pilot Study Evaluation Report 10 months after the HRC[®] injection and may request the second injection event if the results of the first event show that chlorinated hydrocarbons are still present and groundwater does not contain total organic carbon, a surrogate for lactic acid, above the baseline level. The Discharger shall not conduct the second injection of the HRC[®] into groundwater until receiving approval from Regional Board staff.

The Discharger also operates a log deck at the Site to store and maintain logs before they are processed into lumber and other products. Thus, the Discharger has Waste Discharge Requirements Order No. 98-224 for the permitted irrigation of the log deck.



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SCALE



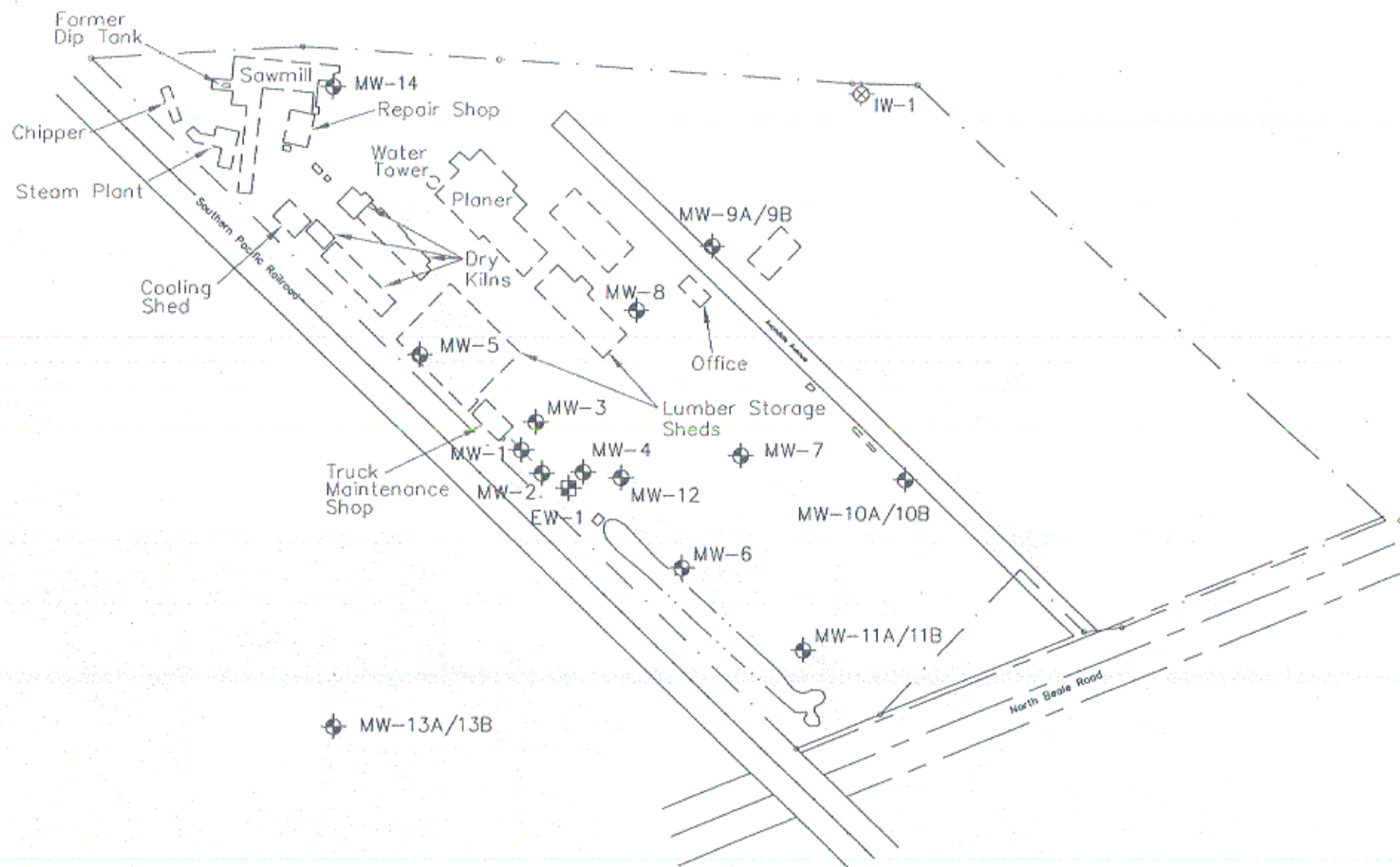
Attachment A

Site Location Map

HRC Pilot Study Work Plan
Feather River Forest Products
Marysville, California

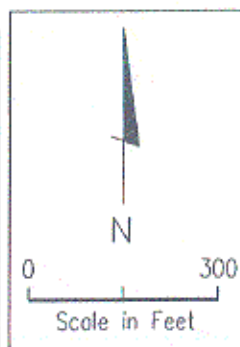


MWH
MONTGOMERY WATSON HARZA



EXPLANATION

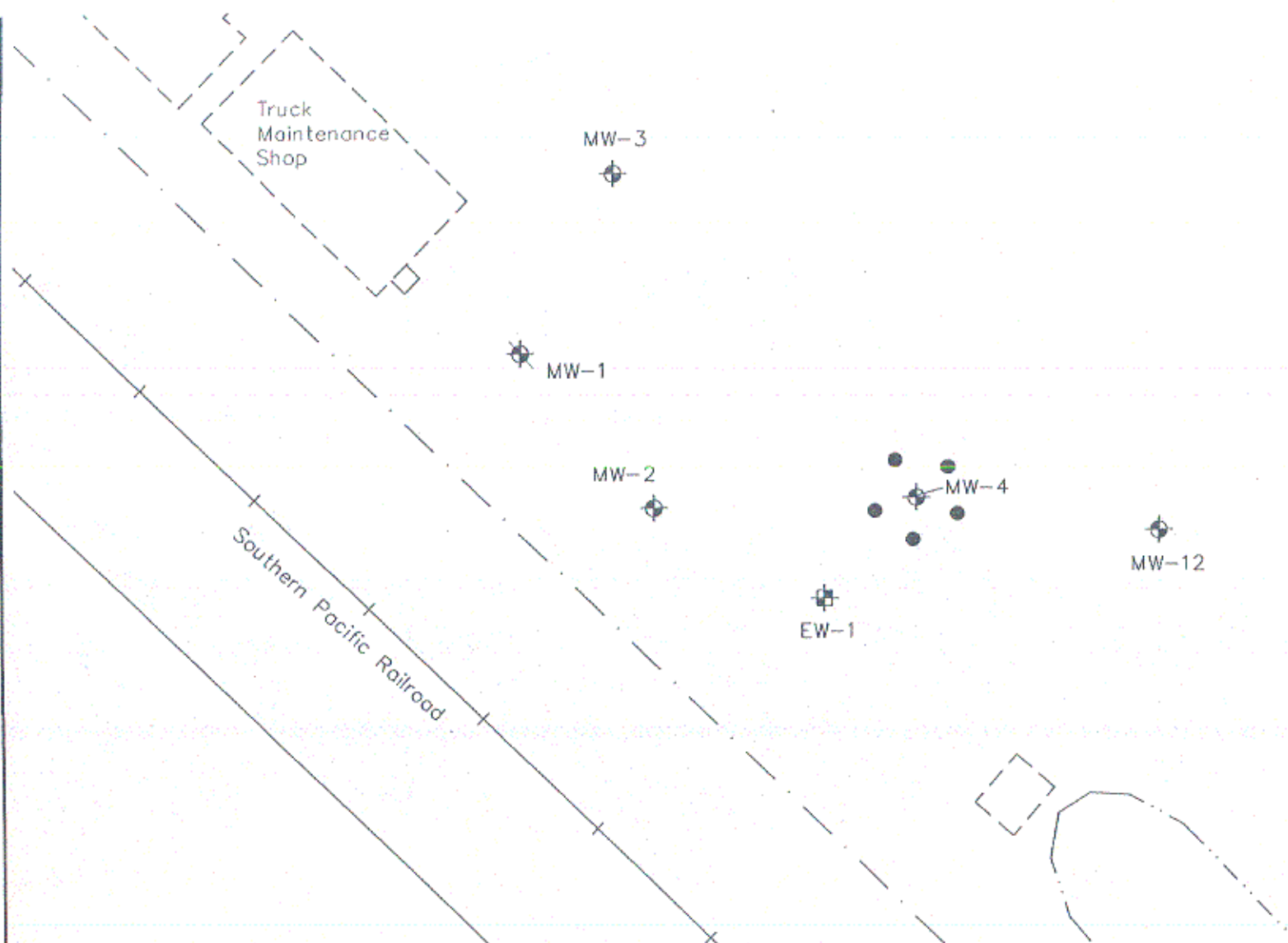
- ⊕ MW-3 Monitoring Well Location
- ⊗ MW-1 Abandoned Monitoring Well Location
- ⊙ IW-1 Injection Well
- ⊕ EW-1 Extraction Well
- Site Boundary
- - - - - Former Site Structure Location



MWH

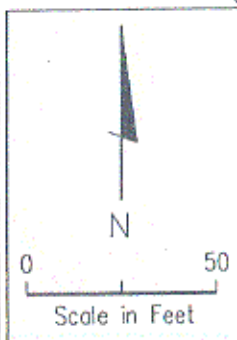
HRC Pilot Study Work Plan
Feather River Forest Products
Marysville, California

FRFP SITE LAYOUT
Attachment B



EXPLANATION

- HRC Injection Point
- ⊕ MW-3 Monitoring Well Location
- ⊕ MW-1 Abandoned Monitoring Well Location
- ⊕ EW-1 Extraction Well
- Site Boundary
- Former Site Structure Location



MWH

HRC Pilot Study Work Plan
Feather River Forest Products
Marysville, California

Proposed HRC Injection Locations
Attachment C